TECHNICAL MANUAL

GS MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST

AC DEICER GENERATOR

PART NUMBER
AGE121-1A
AGE121-1

This manual supersedes TM 55–6115–240–40, 8 December 1967.

HEADQUARTERS, DEPARTMENT OF THE ARMY
19 APRIL 1971

WARNING
PRECAUTIONARY DATA

Personnel performing instructions involving operations, procedures, and practices which are included or implied in this technical manual shall observe the following instructions. Disregard of these warnings and precautionary information can cause serious injury, death, or an aborted mission.

USING TOXIC MATERIALS. Due to the toxicity of the solvents and solutions used in the cleaning procedures, adequate ventilation must be provided. Avoid prolonged contact with solutions and chemicals.

OVERSPEED TEST. Make sure that personnel and equipment are kept clear of test areas during overspeed test. If AC deicer generator fails because of centrifugal stresses, there is danger of flying metal.

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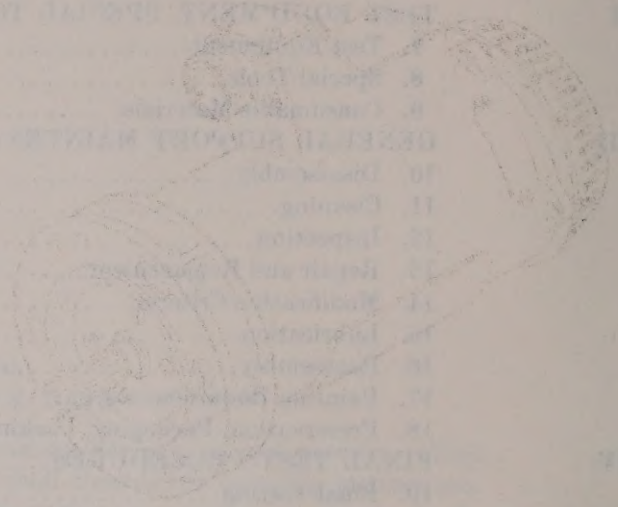


SECTION I
INTRODUCTION

1. GENERAL INFORMATION.

This technical manual comprises overhaul instructions for AC generator, Part No. AGE121–1A (see fig. 1), manufactured by American Machine and Foundry Co., Leland Airborne Products (07639), Vandalia, Ohio. Sections I through IV of this technical manual contain instructions for this part number. Overhaul instructions for additional part numbers are provided in Section V by the use of Difference Data Sheets.

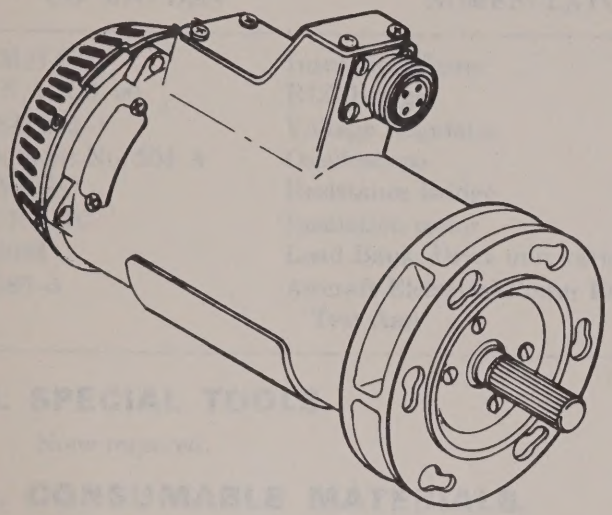


Figure 1. AC Generator, Part Number AGE121–1A.

2. REPORTING OF IMPROVEMENTS.

Report of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to DA Publications) and forwarded directly to: Commanding General, U. S. Army Aviation Systems Command, Attn: AMSAV–R–M, P. O. Box 209, St. Louis, Missouri 63166.

3. PURPOSE.

The AC generator is an airborne unit used to provide 115-volt ac, 400 cps single-phase power source to actuate propeller and cowl deicer heating units.

4. EQUIPMENT RECORDS.

The Army Maintenance Management System established in TM 38–750 applies to this equipment. The applicable forms as required in TM 38–750 shall be used.

5. DESCRIPTION.

The AC generator is a 115-volt, ac, 400-cps, single-phase generator capable of maintaining a continuous output of 6.5 kw (kilowatts), throughout a drive speed range of 8900 to 14,500 rpm. The generator is cooled by an integral fan mounted at the anti-drive end of the generator.

6. LEADING PARTICULARS.

Leading particulars for the AC generator are as follows:

OUTPUT

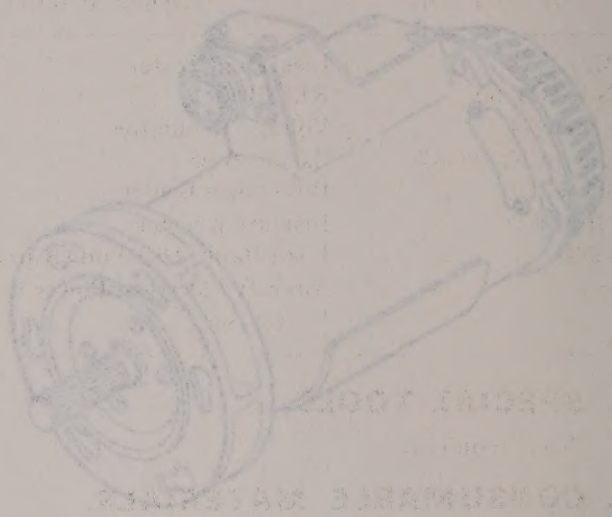
VA Rating	6.5 kva
Volts	115 ac
Range of voltage limits	115 ± 6 volts for all combinations of loads and speed variations.
Frequency	400 cps
Range of Frequency	297–467 Hz

INPUT

Drive speed	8900 to 14,500 rpm
Normal shaft speed	12,000 rpm
Overspeed (1 minute only)	16,000 rpm
Rotation (viewed from fan end)	CCW

OPERATING RANGE (For 6.5 kva)

Altitude	Sea level to 25,000 ft.
Temperature	+105°F to +10°F (+40°C to −12°C)
Speed range	8900 to 14,500 rpm
Efficiency	72 per cent minimum at 14,500 rpm; 75 per cent minimum at 8900 to 12,000 rpm
AGE121–1A Outline DWG	B9117
Weight (Generator)	23 pounds
Schematic drawing (Generator)	G5176



SECTION II
TEST EQUIPMENT, SPECIAL TOOLS AND MATERIALS

7. TEST EQUIPMENT.

Test equipment required during overhaul of the AC generator is listed in table 1.

Table 1. Test Equipment Required

PART MODEL OR MIL–DES	NOMENCLATURE	TECHNICAL DESCRIPTION
EM21A/U	Insulation Tester	500 VDC
AN/URM–90	RLC Bridge	Ohmmeter
CSD 802–1	Voltage Regulator	AC
Dumont No. 304-A	Oscilloscope	
ZM4/U	Resistance Bridge	Ohmmeter
13700–1C	Insulation tester	AC
16093	Load Bank, Drive unit variable	6.5 KVA
7085–5	Aircraft Electrical Power Equipment Test Assy	Provide loading and measurements during final test

8. SPECIAL TOOLS.

None required.

9. CONSUMABLE MATERIALS.

Consumable materials required during overhaul of the AC generator are listed in table 2.

Table 2. Consumable Materials Required

ITEM NO.	MATERIALS	TYPE, CLASS OR GRADE	GOVERNMENT SPECIFICATION
1	Dry Cleaning Solvent		P–D–680
2	Grease, Aircraft, High Temperature		MIL–G–3545
3	Lubricating Oil, General Purpose, Low Temperature		MIL–L–7870
4	Lubricating Oil, Internal-Combustion Engine, Heavy-Duty		MIL–L–2104
5	Molybdenum Disulfide Power, Lubricant		MIL–M–7866
6	Paper, Abrasive, Flint	Class 2 No. 000	P–P–105
7	Loctite	Grade A	MIL–S–22473B
8	Solder, Tin Alloy, Lead-Tin Alloy and Lead Alloy	Comp SB5	QQ–S–571
9	Zinc Chromate		MIL–P–8585
10	Enamel, Electrical Insulating, Schenectady Varnish Co.	#300G Red Insulating enamel	Vendor #88577
11	Barrier Material, Grease-proofed, Water-proofed, Flexible		MIL–B–121
12	Drums, Metal Reusable, Shipping and Storage		MIL–D–6055
13	Drums, Metal, Shipping and Storage		MIL–D–6054

Table 2. Consumable Materials Required (Cont)

ITEM NO.	MATERIALS	TYPE, CLASS OR GRADE	GOVERNMENT SPECIFICATION
14	Glass, Curved Laminated, Plain Edge, Extended Plastic Edge, and Extended Plastic Edge with Metal Reinforcement		MIL–C–7767
15	Polyurethane Foam, Rigid or Plastic, for Packaging		MIL–P–26514
16	Surfcote 1000 (Manufactured by Hohman Plating, Co., Dayton, Ohio 45404)		

SECTION III
GENERAL SUPPORT MAINTENANCE

10. DISASSEMBLY.

Disassemble the AC generator in accordance with the index number sequence assigned to the exploded view illustration (fig. 2) and the following instructions:

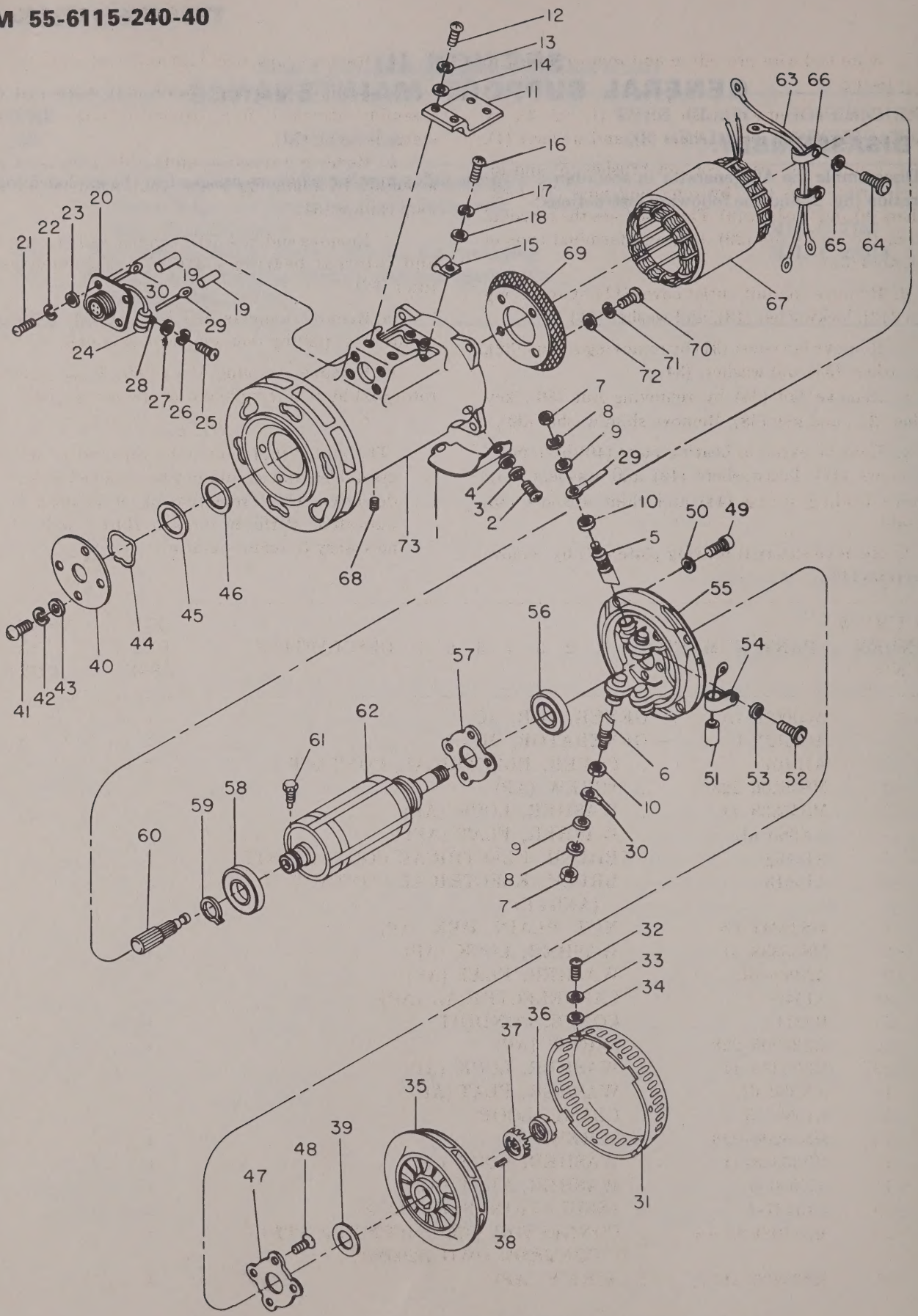


Figure 2. AC Generator, Part Number AGE121–1A, Exploded View.

a. Note lockwire procedure and remove lockwire as necessary.

b. Remove contact brush covers (1, fig. 2), by removing screws (2), lockwashers (3), and washers (4).

c. Remove electrical contact brushes (5) and (6) and electrical caps (10) by removing nuts (7), lockwashers (8) and washers (9). This also frees the terminal ends of the lead units (29), (30) and terminal ends of capacitors (51).

d. Remove conduit outlet cover (11) by removing screw (12), lockwasher (13), and washer (14).

e. Remove fan cover (31) by removing screws (32), lockwashers (33) and washers (34).

f. Remove fan (35) by removing nut (36), key washer (37), and key (38). Remove shim washer (39).

g. Remove external bearing plate (40) by removing screws (41), lockwashers (42) and washers (43). Remove loading spring (44) and shim washers (45) and (46).

h. Remove external bearing plate (47) by removing screws (48).

i. Remove capscrews (49) and washers (50).

j. Remove generator rotor (62), with end bell assembly attached, from generator stator (67) and stator housing (73).

k. Remove capacitor units (51) from end bell assembly by removing screws (52), washers (53) and loop clamps (54).

l. Remove end bell (55), annular ball bearing (56) and internal bearing plate (57) from generator rotor (62).

m. Remove annular ball bearing (58) from generator rotor (62) by removing lock ring (59).

n. Remove coupling shaft (60) from generator rotor (62) by removing lockwire and screws (61).

NOTE

The stator (67) cannot be repaired or disassembled and should not be removed unless defective, or if replacement of housing is indicated. Perform steps *o* thru *t* only if necessary to remove stator.

FIGURE & INDEX NO.	PART NUMBER	1 2 3 4 5 6 7 DESCRIPTION	QTY PER ASSY	USABLE ON CODE
2–	AGE121–1A	GENERATOR, AC	1	
	AGE121–1	GENERATOR, AC	1	
–1	A15461	. COVER, ELECTRICAL, CONTACT	2	
–2	MS35206–228	. SCREW (AP)	4	
–3	MS35338–41	. WASHER, LOCK (AP)	4	
–4	AN960–6L	. WASHER, FLAT (AP)	4	
–5	A15468	. BRUSH, ELECTRICAL CONTACT (STR)	2	
–6	A15613	. BRUSH, ELECTRICAL CONTACT (ANGLE)	2	
–7	MS20341–6S	. NUT, PLAIN, HEX (AP)	4	
–8	MS35338–41	. WASHER, LOCK (AP)	4	
–9	AN960–6L	. WASHER, FLAT (AP)	4	
–10	A15420	. CAP, ELECTRICAL (AP)	4	
–11	B9211	. COVER, CONDUIT	1	
–12	MS35206–228	. SCREW (AP)	4	
–13	MS35338–41	. WASHER, LOCK (AP)	4	
–14	AN960–6L	. WASHER, FLAT (AP)	4	
–15	A15667–5	. CLAMP, LOOP	1	
–16	MS35206–228	. SCREW (AP)	1	
–17	MS35338–41	. WASHER, LOCK (AP)	1	
–18	AN960–6	. WASHER, FLAT (AP)	1	
–19	A19427–4	. INSULATION, SLEEVING	2	
–20	MS3102R22–4S	. CONNECTOR (07639) (SPECIFICATION CONTROL DWG A20089)	1	
–21	MS35206–215	. SCREW (AP)	4	

FIGURE & INDEX NO.	PART NUMBER	1 2 3 4 5 6 7 DESCRIPTION	QTY PER ASSY	USABLE ON CODE
2–22	MS35338–40	. WASHER, LOCK (AP)	4	
–23	AN960–4	. WASHER, FLAT (AP)	4	
–24	A10252–11	. CAPACITOR, FIXED, PAPER DIELECTRIC	2	
–25	MS35206–227	. SCREW (AP)	2	
–26	MS35338–41	. WASHER, LOCK (AP)	2	
–27	A3637–3	. WASHER, FLAT (AP)	2	
–28	A10618–1	. CLAMP, LOOP (AP)	2	
–29	K20439	. LEAD UNIT, ELECTRIC (F1)	1	
–30	K20440	. LEAD UNIT, ELECTRIC (F2)	1	
–31	G5148	. COVER, FAN	1	
–32	MS35206–228	. SCREW (AP)	7	
–33	MS35338–41	. WASHER, LOCK	7	
–34	AN960–6L	. WASHER, FLAT	7	
–35	P9356	. FAN	1	
–36	A10385	. NUT, PLAIN, ROUND (AP)	1	
–37	A10384	. WASHER, KEY (AP)	1	
–38	A10390	. KEY, MACHINE	1	
–39	K20390–1	. WASHER, SHIM	AR	
–40	A19024	. PLATE, BEARING, EXTERNAL	1	
–41	MS35206–245	. SCREW (AP)	4	
–42	MS35338–42	. WASHER, LOCK (AP)	4	
–43	AN960–8	. WASHER, FLAT (AP)	4	
–44	A10960	. SPRING, LOADING	1	
–45	1562–10	. WASHER, SHIM	AR	
–46	1562–9	. WASHER, SHIM	AR	
–47	A10388	. PLATE, BEARING, EXTERNAL	1	
–48	MS35190–255	. SCREW (AP)	4	
*	P9764	. BELL ASSEMBLY, END	1	
–49	A15555–12	. SCREW, CAP, SOCKET HD (AP)	4	
–50	AN960–10L	. WASHER, FLAT (AP)	4	
–51	K20438	. . CAPACITOR, UNIT	4	
–52	A7471–5	. . SCREW, ASSEMBLED WASHER (AP)	4	
–53	AN960–6L	. . WASHER, FLAT (AP)	4	
–54	A10618–1	. . CLAMP, LOOP (AP)	4	
–55	*	. . END BELL	1	
–56	A15884	. BEARING, BALL, ANNULAR	1	
–57	A10387	. PLATE, BEARING, INTERNAL	1	
–58	A20093	. BEARING, BALL, ANNULAR	1	
–59	MS9013–20	. RING, RETAINING (AP)	1	
–60	B9210	. COUPLING, SHAFT	1	
–61	K22319	. SCREW, MACHINE, SPECIAL (AP)	2	
–62	C5099	. ROTOR, GENERATOR	1	
	C5098	. STATOR, GENERATOR	1	
–63	K20437	. . LEAD UNIT, ELECTRICAL	2	
–64	A7471–5	. . SCREW, ASSEMBLED WASHER (AP)	2	
–65	AN960–6L	. . WASHER, FLAT (AP)	2	
–66	A15667–2	. . CLAMP, LOOP (AP)	2	
–67	D801	. . STATOR, AC	1	

FIGURE & INDEX NO.	PART NUMBER	1 2 3 4 5 6 7 DESCRIPTION	QTY PER ASSY	USABLE ON CODE
2–68	1522–5	. . SET SCREW (AP)	3	
–69	B9213	. . SCREEN, VENT	1	
–70	MS35206–242	. . SCREW (AP)	4	
–71	MS35338–42	. . WASHER, LOCK (AP)	4	
–72	AN960–8	. . WASHER, FLAT (AP)	4	
–73	D797	. . HOUSING, STATOR	1	
	MS26515–1	. PLATE, DESIGNATION (USE DATA)	1	
	MS35206–213	. SCREW, MACHINE (AP)	4	
	MS35338–40	. WASHER, LOCK (AP)	4	
	AN960–4	. WASHER, FLAT (AP)	4	
	A15639	. PLATE DESIGNATION	1	

*NOTE: REPLACEMENT END BELL ASSEMBLIES ARE PROCURABLE UNDER PART NO. P9764 ONLY.

o. Remove loop clamp (15) by removing screw (16), lockwasher (17) and washer 18). Slide insulating sleeves (19) clear of connector (20) and unsolder.

p. Remove connector (20) by removing screws (21), lockwashers (22) and washers (23).

q. Remove capacitors (24) by removing screws (25), lockwashers (26), washers (27) and loop clamp (28).

r. Remove leads (29 and 30). Tag leads to insure correct reinstallation.

s. Remove lead units (63) from generator stator by removing screws (64), washers (65) and loop clamps (66).

t. To remove the stator (67) from the stator housing (73) unsolder leads from the connector. If stator (67) is to be discarded and replaced the leads may be cut to facilitate removal.

(1) Unstake and remove set screws (68).

WARNING

Use heavy gloves when handling warm stator (67) and housing (73).

(2) Place the stator housing (73) fan end downward on a heat resistant surface that will provide adequate clearance beneath stator housing (73) to allow stator (67) to drop free.

(3) Using a torch, apply heat in a circular motion around the stator housing (73). The stator (67) will drop free after sufficient heat has been applied.

NOTE

If an oven is used to heat the stator housing instead of a torch for stator removal, heat the stator housing at 450° F for ten minutes.

u. Remove vent screen (69) only if damaged.

11. CLEANING.

Clean disassembled AC generator as follows:

WARNING

Dry cleaning solvent, Federal specification P-D-680, is flammable. Keep it away from open flames or hot surfaces. Use only in a well-ventilated area taking care not to inhale the toxic fumes.

a. Clean all nonconducting metallic components in dry cleaning solvent (item 1, table 2). For the removal of stubborn dirt use a stiff nonwire brush dipped in dry cleaning solvent. Dry with dry low pressure filtered compressed air.

NOTE

Clean internal spline in rotor shaft with glass bead abrasive air blast. Protect windings, bearings and journals from the abrasive.

b. Conducting components may be cleaned with a clean, dry, lint free cloth, a soft brush or dry low pressure filtered compressed air.

CAUTION

Under no circumstances will carbon tetrachloride be used as a cleaning agent. Do not soak electrical or electronic components in dry cleaning solvent. Under no circumstances will the AC generator rotor, stator, or new bearings be washed in or soaked in dry cleaning solvent.

c. After cleaning and final assembly, scratches or damaged external finish areas will be touched up or refinished in accordance with paragraph 17.

12. INSPECTION.

Inspect all wiring, sleeving and terminal connections. Examine for frayed or burned insulation. Replace damaged wiring in accordance with the the wiring diagram, figure 3. Refer to table 3 and table 4 for inspection procedures. Perform continuity test on all leads.

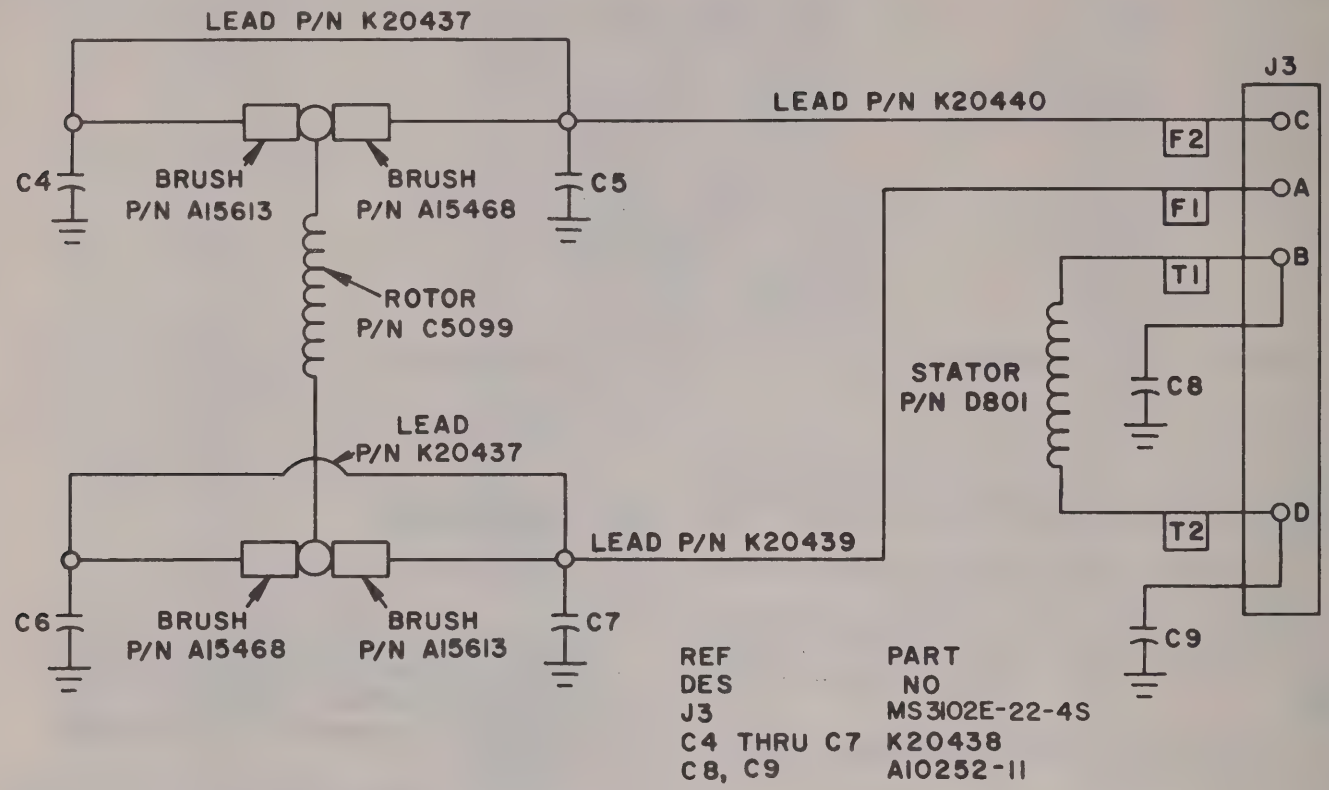


Figure 3. Wiring Schematic Diagram for AGE121–1A.

Table 3. Classification of Defects

	MAJOR DEFECTS
1.	Cracks, scoring, pitting, nicks, distortion, or discoloration of surfaces which could affect function or interchangeability.
2.	Flaking or damage to protective coatings.
3.	Dimensions or damage to threads essential to function or interchangeability.
4.	Test parameters out of limits.
5.	Electrical characteristics of capacitors open or shorted.
	MINOR DEFECTS
100.	All other cracks, scoring, pitting, etc. which does not affect function or interchangeability.
101.	Coverage and adherence of protective coating of paint.
102.	Dimensions or damage to threads which does not affect function or interchangeability.
103.	Mechanical dimensions and characteristics off by four percent.

Table 4. Detail Inspection Requirements after Disassembly

FIG. NO.	INDEX NO.	NOMENCLATURE	REF NO.	MAJOR DEFECTS	METHOD OF INSPECTION	REF NO.	MINOR DEFECTS	METHOD OF INSPECTION	REMARKS
2	–1	Cover	1	Cracks or Distortion	Visual	101	Paint Peeling	Visual	
2–	–10	Cap	3	Damaged Threads	Visual	102	Nicks and Scratches	Visual	
2–	–11	Conduit Cover	1	Cracks	Visual	101	Paint Peeling	Visual	
2–	–20	Connector	1	Cracks, Pitting and Discoloration	Visual				
			3	Damaged Threads	Visual	102	Damaged Threads	Visual	
2	–24, –51	Capacitor	1	Discoloration	Visual				
			5	Open or Shorted	SIE				Para 12*c*
2–	29, –30, 63	Lead Unit	1	Discoloration	Visual				Para 12
			4	Test Parameters out of Limits	SIE				
2	–31	Fan Cover	1	Cracks, Broken or Distortion	Visual	101	Paint Peeling	Visual	Para 13*c*
2–	–35	Fan	1	Cracks, Broken or Distortion	Visual	101	Protective Coating	Visual	
2–	–55	End Bell	1	Cracks or Distortion	Visual	101	Protective Coating	Visual	Para 12*a*
			3	Damaged Threads or Dimensions	SIE	103	Dimensions	Visual	Para 12*a*
2	–62	Generator Rotor	2	Damage to Protective Coating	Visual				
			3	Dimensions and Damage to Threads	SIE				Para 13*b*
2	–62	Generator Rotor	4	Test Parameters Out of limits	SIE				Para 12*b*(1) Para 12*b*(2)
2	–67	Stator	1	Cracks	Visual	101	Protective Coating	Visual	
			4	Test Parameters Out of limits	SIE				Para 12*d*
2–	–73	Stator Housing	1	Cracks	Visual	101	Protective Coating	Visual	
			3	Dimensions, Damaged Threads	SIE	103	Mechanical Dimensions		Para 12*e*

a. Inspect end bell (item 55, fig. 2). Replace end bell if the casting is cracked, brush holders are loose, threads on brush holder are stripped or if the bearing bushing exceeds an ID of 1.3787 inches.

b. Replace rotor (62) if it fails to pass any of the following inspection requirements:

(1) Conduct dielectric test with insulation tester. Apply 300V at 60 cps for one second between slip rings and rotor shaft. Apply test prods to the sides of the slip rings only and ensure test prods, DO NOT contact bearing journals or other machined surfaces. There must be no breakdown.

NOTE

If rotor requires balancing (refer to paragraph 13*e*) conduct dielectric test after balancing.

(2) Resistance between slip rings shall be 5.0 ± 5% ohms.

(3) Examine condition of coating on the windings. Replace rotor if protective coating is cracked and windings are exposed.

c. Check capacitors (24) and (51) with ohmmeter. Touch one test lead to capacitor lead and the other test lead to the capacitor case. The ohmmeter needle should deflect momentarily and return to infinity.

d. Repair to stator (67) is not authorized.

(1) Check stator winding resistance between T1 (pin B) and T2 (pin D). Resistance should be 0.084 ± 5% ohms.

NOTE

Perform dielectric test on stator ONLY if trouble shooting indicates stator is faulty.

(2) Disconnect capacitors (24) from housing by removing screws (25), lockwashers (26), washers (27) and clamp (28). DO NOT allow capacitor case to touch generator housing when performing the dielectric test.

(3) With insulation tester, apply 300V 60 cps to pin B or D and an unpainted unmachined surface of the housing. There must be no breakdown.

e. Inspect bearing bushing in stator housing (73) with a micrometer. Replace stator housing (73) if bearing bushing ID exceeds 1.8508 inches.

13. REPAIR AND REPLACEMENT.

Replace all parts and assemblies found to be defective during inspection.

a. Replace all bearings, brushes, key washer, shaft locknut, retaining ring, coupling shaft and screws (61, fig. 2).

b. Polish the slip rings with flint abrasive paper (item 6, table 2). If contact surface is rough or in such a condition that polishing or cleaning will not restore its condition, proceed as follows:

(1) Mount the rotor between lathe centers and check concentricity with a dial indicator while turning rotor by hand. Refer to figure 4.

(2) Using a sharp lathe tool (diamond cutting tool) take a light cut not to exceed 0.0005 inch across the slip ring surface. Take a second cut, if necessary, to remove rough spots or grooves. Remove all copper burrs. Refer to figure 4.

c. Fan cover breaks or cracks may be repaired as follows:

(1) Strip the fan cover if breaks or cracks are noted. Weld breaks or cracks per MIL–W–8604, T1G Method, using QQ–R–566 Class 4043 filler rod.

NOTE

Breaks shall be welded from the outside of the fan cover.

(2) Hand grind welds to produce smooth surfaces. Apply chemical film per MIL–C–5541. Paint outer surface with MIL–L–19537 Lacquer Color Number 17033 per Federal Standard 595.

d. Earlier model AGE121–1 generators may have a two-piece end bell (55, figure 2) consisting of a ring adapter and end bell. These shall be replaced at overhaul with end bell assembly Part No. P9764. Refer to paragraph 14 for other differences.

e. Balancing of the Generator Rotor. Mount the rotor in a dynamic balancing machine (item 8 table 1) with the machine set for maximum sensitivity.

(1) Determine the position and amount of unbalance.

(2) Remove the rotor from the balancing machine and remove material from the Amortissuer ring (fig. 4) and pole piece by grinding to approximate the weight of unbalance.

NOTE

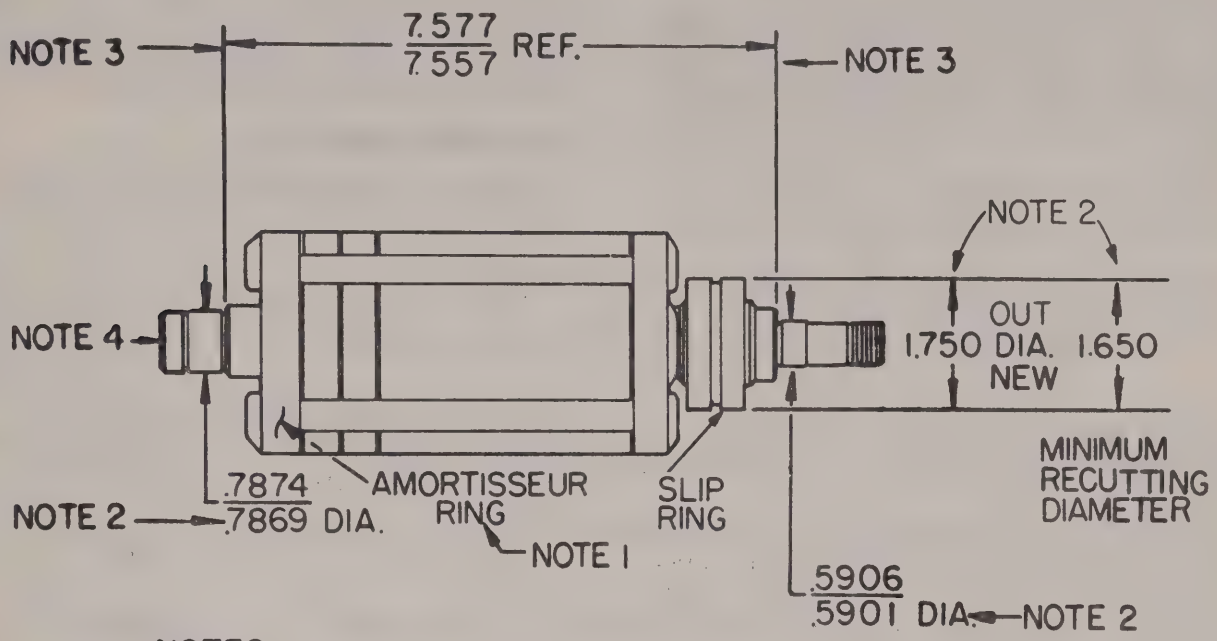
Due to the non-uniformity of the surfaces in the balance area, balancing is accomplished by the trial and error method.

(3) Replace rotor in the balancing machine and recheck for unbalance.

(4) Repeat steps (2) and (3) until rotor is balanced within 0.010 ounce-inches in each of two planes.

(5) Coat all balance cuts with zinc chromate to prevent future corrosion.

(6) Repeat dielectric test and winding resistance measurement.



NOTES:

1. BALANCE BY SUBTRACTION. DO NOT REMOVE MORE THAN 1/4 OF CROSS SECTION OF AMORTISSEUR WINDING. COAT BALANCE CUTS WITH ZINC CHROMATE TO PREVENT FUTURE CORROSION.
2. DIAMETERS MUST BE CONCENTRIC WITHIN 0.001 INCH TOTAL INDICATOR READING.
3. JOURNAL FACE MUST BE SQUARE WITH DIAMETERS WITHIN 0.001 INCH. A MAXIMUM OF 0.005 INCH MAY BE MACHINED OFF EACH FACE.
4. EXERCISE CAUTION TO PREVENT LATHE CENTERS USED FOR INSPECTION AND MACHINING FROM DAMAGING INTERNAL SPLINE TEETH.

Figure 4. AC Generator Rotor Balance and Wear Dimensions.

14. MODIFICATION CRITERIA.

The basic difference between the early model AGE121–1 generators and the AGE121–1A generators are as follows:

a. The coupling shaft in the early AGE121–1 was secured to the generator rotor by means of two headless setscrews. These setscrews were removed and two special drilled hex head screws (61, fig. 2) installed and lock wired. Units so changed were identified as AGE121–1A.

b. Early original AGE121–1 models had a two-piece end bell consisting of an adapter ring and an end bell. These parts shall be replaced as early as possible during overhaul with end bell part number P9764 (item 55, fig. 2).

c. Should inspection reveal that the generator has been modified to use the one-piece end bell and the lock wired screws in the rotor, the unit must be reidentified by stamping suffix letter "A" following model number AGE121–1 on the nameplate.

15. LUBRICATION.

Lubricate AC generator as specified in table 5.

Table 5. Lubrication Requirements

LUBRICATION	LUBRICATION POINT	LUBRICATION INTERVAL
Thread compound, (item 9, table 2)	Screws in end bell and stator housing	At reassembly
Grease, aircraft high temperature (item 2, table 2)	Spline coupling and rotor shaft	At reassembly
Surfcote 1000 or Molybdenum disulfide and oil mixture (equal parts by weight of item 5 and item 4, table 2)	Inside and outside diameter of bearings	At reassembly
Surfcote 1000 or Molybdenum disulfide (item 5, table 2) and lubricating oil (item 4, table 2) mix three parts item 5 and one part item 4.	Friction surfaces of spline coupling	At reassembly

16. REASSEMBLY.

Thoroughly clean corrosion preventative from journals and bearing bores. Apply a light uniform coat of lubricant, SURFCOTE 1000 to these surfaces prior to assembling.

a. Lubricate spline coupling (60) and rotor shaft in accordance with table 5.

b. Apply loctite (item 7, table 2) to screws (61).

c. Insert spline coupling (60) into rotor shaft and secure with new screws (61). Torque screws to 33 inch-pounds and lockwire per MS33540.

NOTE

Screws (61) shall be replaced with new screws each time the splined coupling is removed and replaced. Coupling MUST BE LOOSE to the touch within the shaft after assembling.

d. Reassemble the AC generator as follows: (See figure 2). Install internal bearing plate (57) on fan end of rotor (62). Press new bearings (56) on fan end of rotor (62) and bearing (58) on splined end of rotor observing the following instructions for procurement, stocking, handling and installation of bearings.

NOTE

Bearings are a very critical item. Failure to observe the precautions stated may result in premature failure of the generator.

(1) DO NOT SUBSTITUTE. Use only bearings specified in parts list.

(2) Rotate bearing stock. Use oldest first.

(3) The life of bearing lubricant is 5¾ years from the date imprinted on the bearing package wrapper. This factor must be considered prior to installing a new bearing.

(4) It is recommended that the equipment not be assembled with a bearing older than 3¾ years.

(5) Each generator having the bearings replaced shall be marked "*(date)* AGE CONTROLLED ITEM". The date entered shall be the date code shown on the outside of the bearing container. New generators will be designated "AGE CONTROLLED" necessitating date change only.

(6) It is recommended that unused bearings older than 3¾ years be returned to the generator contractor for rehabilitation.

(7) The work area must be neat and clean and free of lint and abrasive or other harmful particles.

(8) The bearing must not be removed from the storage container (bearing package) until immediately prior to installation on the shaft and the rotor is ready to be installed in the unit. If necessary to lay the bearing down temporarily, place it on its own wrapper or on a piece of clean oil proof paper or plastic film.

(9) Be sure the shaft journal surface, locating shoulder and undercut are free of dirt, roughness or burrs which might interfere with complete and proper seating of the bearing. Shaft shoulder shall not be nicked, rolled or damaged and shall meet the squareness requirement defined in figure 4.

(10) Leave the packaging grease on the bearing.

(11) When pressing bearings onto shaft, position so that when practical the bearing trademark or identity is outward, away from the shaft shoulder. Utilize bearing pressing fixture Part No. ATD25503, or equivalent, for pressing bearing onto the shaft. Apply pressure uniformly to the inner race only. Avoid any pressure to the outer race and be extremely careful not to touch the shield or seal with the pressing tool.

(12) If rotor cannot be installed into the unit in the same day, cover the bearings with plastic film or oil proof paper.

(13) Prior to assembling rotor end bell, and housing with the bearings, apply a thin film of high temperature molysulphide (Surfcote 1000 or equivalent, see table 2) to the bearing bore. Use the finger or clean paper. Remove any excess lumps of compound.

(14) If a bearing must be removed from the shaft for any reason, replace it with a new approved bearing even though the bearing removed is new and un-used. The removal procedure has a damaging effect on the bearing.

e. Secure bearing (58) with retaining ring (59).

f. Install capacitors (51) on end bell (55). Secure with loop clamp (54), washer (53) and screws (52). See figure 5.

g. Ensure bearing bushing in end bell (55, fig. 2) is clean and free of all foreign material. Position end bell over fan end of rotor shaft and carefully insert ball bearing (56) into the end bell bearing bushing. If ball bearing (56) does not slide into the bushing with slight pressure, do not apply force to the end bell. Remove the end bell, reposition it and repeat the installation process.

h. Install external bearing plate (47) on fan end of rotor shaft. Align internal bearing plate (57) screw holes with end bell and external bearing plate screw holes. Coat threads of screws (48) with loctite (item 7, table 2). Install screws (48) and tighten snugly, through the external bearing plate (47) securing the internal bearing plate (57).

NOTE

Bearing plate retaining screws will be tightened and staked after end bell assembly has been installed. Proceed with steps *i* and *j* only if stator housing (73) or vent screen (69) has been replaced.

i. Install vent screen (69) in stator housing (73) and secure with washers (72), lockwashers (71), and coat threads of screws (70) with loctite (item 7, table 2). Install screws (70) and tighten.

j. To install the stator (67) into the stator housing (73), proceed as follows:

(1) Place stator housing (73) fan end upward on a heat resistant surface and secure the stator housing from movement to facilitate alignment of the hole in the stator housing with the lead wires from the stator (67).

(2) Using a torch, apply heat from a distance of about ten inches, in a circular motion to the stator housing (73). Slide stator (67) into the stator housing. Secure stator (67) into stator housing (73) with screws (68). After stator housing has cooled, remove each set screw (68), one at a time, coat threads with loctite (item 7, table 2) tighten and stake each set screw.

NOTE

If an oven is used to heat the stator housing for stator installation instead of a torch, heat at 450° F for 10 minutes.

(3) Rotor stator lead wires through the opening in the stator housing positioning the lead wires in the connector receptacle area.

k. Install lead units (63) and secure to housing (73) with two loop clamps (66), washers (65) and screws (64). Refer to figure 5.

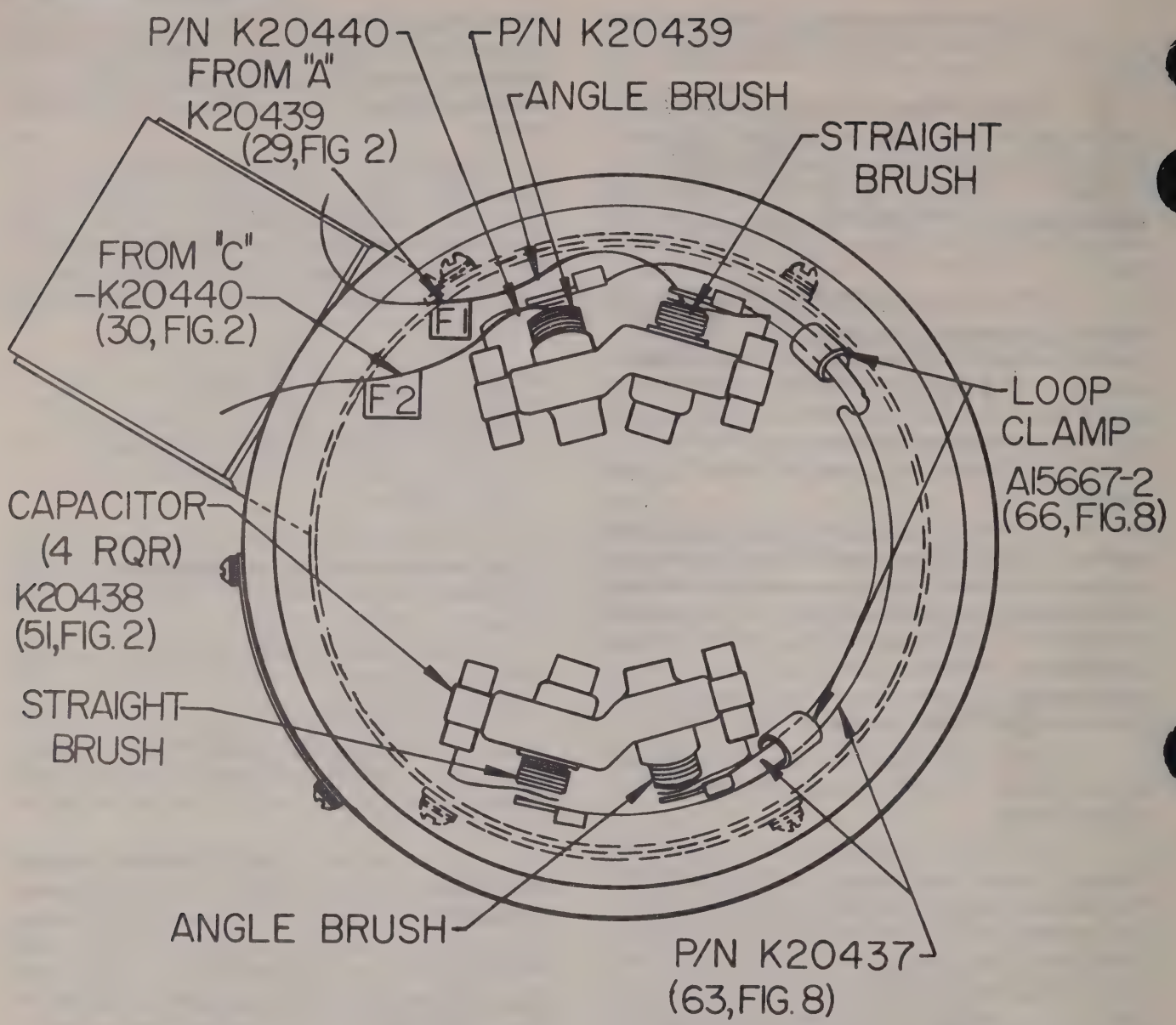


Figure 5. Electrical Lead Unit Diagram.

l. Ensure bearing bushing in stator housing (73) is clean and free of all foreign material. Position stator housing, fan end upward, with adequate clearance underneath for the splined shaft coupling (60). Referring to figure 5, route leads (29) and (30) into the end bell area.

m. Carefully insert the generator rotor (62) with end bell assembly attached partially into the stator housing. If properly aligned ball bearing (58) should slide into the bearing bushing from the weight of the rotor assembly. Refer to figure 3 and figure 5 for routing, arrangement and connection of electrical leads.

n. Align screw holes in housing and end bell with end bell notch. See figure 1. Secure end bell assembly to stator housing with washers (50) and screws (49). Tighten screws snugly and inspect generator rotor for freedom of rotation. Tighten screws (49) evenly.

o. Position shim washers (45 and 46), bearing loading spring (44) and external bearing plate (40) over the coupling shaft (60). Secure with washers (43), lockwashers (42) and screws (41).

p. Tighten and mechanically stake screws (48) and coat screw heads with zinc chromate (item 9, table 2).

NOTE

Refer to figure 6 for ball bearing shimming procedures.

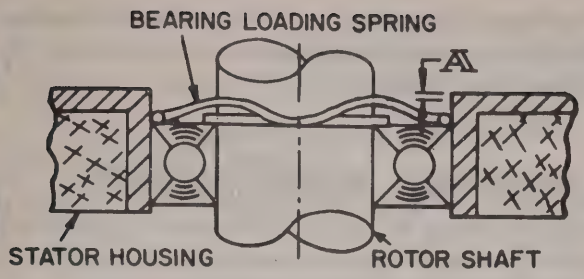

BEARING LOADING SPRING
A
STATOR HOUSING
ROTOR SHAFT
1. LAY SPRING ON BEARING OUTER RACE
2. MEASURE DIMENSION "A". ADD .010 TO .015. THIS WILL GIVE THE REQUIRED THICKNESS OF SHIMS.
3. REMOVE SPRING, INSERT THE REQUIRED SHIM WASHERS AND THEN REPLACE THE SPRING.

Figure 6. Ball Bearing Shimming Procedures.

q. Position shim washer (39), key (38), fan (35), key washer (37) on fan end of rotor. Secure with nut (36). Inspect clearance between fan blades and end bell housing. Add or subtract shim washers (39) until a clearance of 0.015 inch plus or minus 0.005 inch is maintained. Bend a tang of the key washer (37) into an adjacent slot in nut (36). This locks the nut in position. See figure 7.

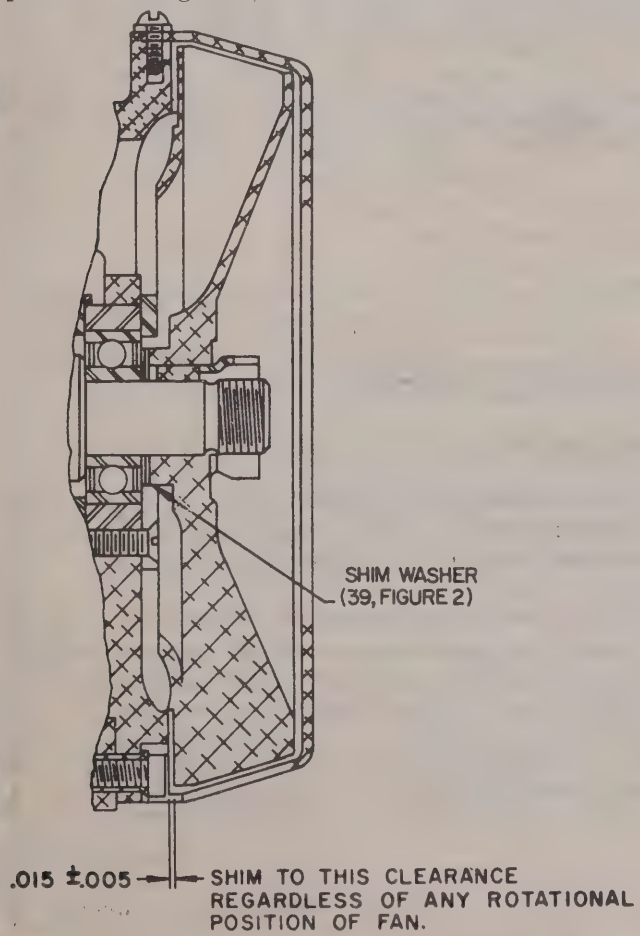


Figure 7. Fan Shimming Procedures.

r. Position fan cover (31) over fan (35). Secure fan cover (31) with washers (34), lockwashers (33) and screws (32). Rotate fan during installation of fan cover and after fan cover is installed to ensure adequate clearance is available to prevent fan rubbing the cover.

NOTE

Check to be certain that opposite brushes (straight or angle) are connected with the same lead wire (63).

s. Insert contact brushes (5 and 6) and secure with electrical caps (10). See figures 3 and 5. Install terminals from lead unit (63) and leads (29 and 30), securing with washer (9), lockwasher (8) and nuts (7).

NOTE

Proceed with steps *t* and *u* only if the stator has been replaced or a dielectric test was performed upon the stator.

t. Install connector (20) on generator stator housing. Secure with washers (23), lockwashers (22) and screws (21).

u. Install capacitors (24) in stator housing, securing clamp (28) with washers (27), lockwashers (26) and screws (25).

v. Position leads (29 and 30) to connector and install clamp (15), washers (18), lockwashers (17) and screw (16).

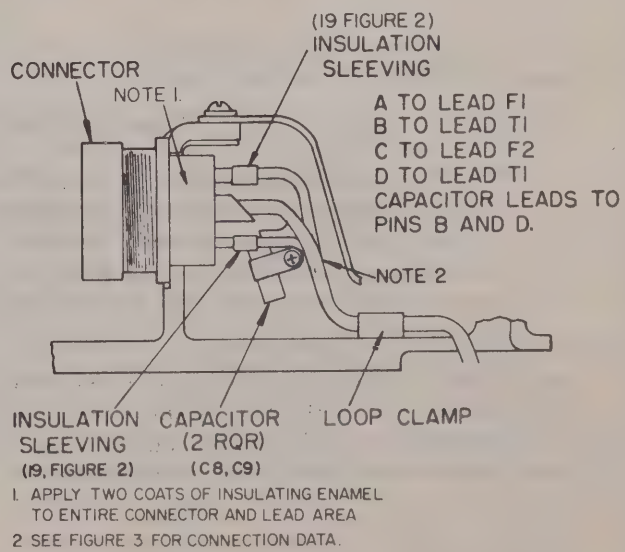

(19 FIGURE 2) INSULATION SLEEVING
CONNECTOR
NOTE 1
A TO LEAD F1
B TO LEAD T1
C TO LEAD F2
D TO LEAD T1
CAPACITOR LEADS TO PINS B AND D.
NOTE 2
INSULATION SLEEVING (19, FIGURE 2)
CAPACITOR (2 RQR) (C8, C9)
LOOP CLAMP
1. APPLY TWO COATS OF INSULATING ENAMEL TO ENTIRE CONNECTOR AND LEAD AREA
2 SEE FIGURE 3 FOR CONNECTION DATA.

Figure 8. Connector Wiring Diagram.

w. Install insulation sleeves (19) on leads (29 and 30). Using solder (item 8, table 2) solder leads (29 and 30), capacitor (24) leads and stator (67) leads to connector terminal sockets per figures 3 and 8. Slide insulation sleeves over terminals on connectors. Apply two coats of enamel (item 10, table 2) to the connector terminals and surrounding area. See figure 8.

x. Position conduit outlet cover (11, fig. 2) on stator housing. Secure with washers (14), lockwashers (13) and screws (12). Ensure that rotation arrow decal is present and legible. Facing drive end of the generator, rotation is clockwise.

y. Position brush cover (1) on stator housing. Secure with washers (4), lockwashers (3) and screws (2). (This step may be delayed until testing.)

z. Run-in brushes per paragraph 20.

17. PAINTING REQUIREMENTS.

If the finish on the AC generator is damaged and/or deteriorated, and requires refinishing, paint in accordance with instructions contained in table 6.

Table 6. Painting Requirements

ITEM NAME	PAINT TYPE & SPECIFICATION	METHOD OF APPLICATION	NO. OF COATS	NOTES
AC Generator	MIL–L–19537	Spray or brush	1	Touchup only

18. PRESERVATION, PACKAGING, PACKING, AND MARKING REQUIREMENTS.

Preserve, package, pack, and mark AC generator in accordance with instructions contained in figure 9.

PRESERVATION, PACKAGING, PACKING AND MARKING REQUIREMENTS

NOMENCLATURE	STOCK NUMBER	
Generator, Deicer	6115-973-1223, 6115-856-5723	
	PART NUMBER	
	AGE 121-1A, AGE 121-1	
NET WEIGHT	DIMENSIONS	GROSS WEIGHT	CUBIC FEET
23 lbs	21" x 16" x 16"	45.2 lbs	2.8

All specifications and standards applicable to the requirements herein shall be the issue in effect on date of invitation for bids.

PACKAGING

[X] LEVEL A [ ] LEVEL C

[X] PACKAGING SHALL BE IN ACCORDANCE WITH SPECIFICATION MIL-P-116, THE FOLLOWING DETAILED REQUIREMENTS SHALL APPLY:

UNIT PKG QTY	METHOD	PRESERVATIVE	WRAP	DUNNAGE	CONTAINER
1	11d	None	MIL-B-121 Gr A	PPP-C-1120	See Packing

[ ] OTHER

[ ] PRESERVATION AND PACKAGING SHALL BE SUCH AS TO PREVENT DETERIORATION OR DAMAGE DURING HANDLING AND SHIPMENT TO THE FIRST DESTINATION

PACKING [X] LEVEL A [ ] LEVEL C

[X] ITEMS SHALL BE PACKED IN CONTAINERS CONFORMING TO SPECIFICATION NO. MIL-D-6054

[ ] PLYWOOD USED SHALL BE STANDARD GRADE WITH EXTERIOR GLUE OF GROUP B OF NN-P-530. THIS PLYWOOD SHALL BE TREATED WITH A WATER REPELLANT CONFORMING TO TT-W-572. PLYWOOD CONTAINERS SHALL BE CONSTRUCTED WITH FILLER CLEATS ON ALL PANELS: EITHER BE BEVELED OR NOTCHED 1/4 INCH ON THE BOTTOM OF EACH END, OR SHALL BE OF SUCH LENGTH AS TO LEAVE A 1/4 INCH CHANNEL FOR DRAINAGE ON EACH END, PER PPP-B-601.

[ ] ITEM SHALL BE PACKED IN A MANNER TO INSURE CARRIER ACCEPTANCE AND SAFE DELIVERY AT DESTINATION. CONTAINERS SHALL BE IN ACCORDANCE WITH UNIFORM FREIGHT CLASSIFICATION RULES OR REGULATIONS OF OTHER CARRIERS APPLICABLE TO THE MODE OF TRANSPORTATION.

[ ] OTHER.

MARKING

[X] a. MARKING FOR SHIPMENTS (1968 JUN)
THE CONTRACTOR SHALL MARK ALL SHIPMENTS UNDER THIS CONTRACT IN ACCORDANCE WITH THE EDITION OF MIL-STD-129, "MARKING FOR SHIPMENT AND STORAGE," IN EFFECT AS OF THE DATE OF THIS SOLICITATION. (ASPR 7-104.68). IN ADDITION, PART NUMBER AND SERIAL NUMBER, IF ANY, SHALL BE MARKED ON UNIT CONTAINER.

[ ] b. ADDITIONAL MARKING REQUIREMENTS. EACH INTERIOR PACKAGE SHALL BE MARKED ON AT LEAST TWO (2) SIDES WITH A SILHOUETTE OF THE AIRCRAFT. (WHERE THE SIZE OF THE UNIT CONTAINER IS TOO SMALL TO PERMIT THE APPLICATION OF TWO (2) LABELS, A SINGLE LABEL SHALL BE APPLIED. IF THE PACKAGE IS TOO SMALL FOR ONE (1), NONE WILL BE REQUIRED.) WHEN THE UNIT CONTAINER IS THE SHIPPING CONTAINER AND THE ITEM IS PACKED "LEVEL A", EACH CONTAINER SHALL BE MARKED ON TWO (2) SIDES, TOP AND ONE (1) END WITH A SILHOUETTE OF THE AIRCRAFT. THE SIZE OF THE SILHOUETTE MAY VARY, BUT WILL BE LARGE ENOUGH TO FACILITATE EASY VISUAL IDENTIFICATION WITHOUT OBSCURING OTHER MARKINGS. THE NOMENCLATURE OF THE MAJOR COMPONENTS SHALL BE EXTENDED TO INDICATE THE END ITEM APPLICATION AND THE POSITION OF THE PART; e.g., GEAR BOX, MAIN FOR (APPLICABLE AIRCRAFT); WING ASSEMBLY, RIGHT, FOR (APPLICABLE AIRCRAFT). REQUESTS FOR SILHOUETTES SHOULD BE SUBMITTED AT LEAST 20 DAYS PRIOR TO SHIPMENT, TO: COMMANDING OFFICER, TOBYHANNA ARMY DEPOT, ATTN: AMXTO-TI, TOBYHANNA, PA. 18466.

[X] c. MATERIEL CONDITION MARKING SHALL BE APPLIED IN ACCORDANCE WITH PARAGRAPH 5.5.16 OF MIL-STD-129. A MATERIEL CONDITION TAG OF THE APPLICABLE TYPE WILL BE SECURELY ATTACHED DIRECTLY TO ALL UNINSTALLED OR STORED AERONAUTICAL OR AIR DELIVERY ITEMS. WHEN SUCH ITEMS ARE PLACED OR STORED IN CARTONS, PACKAGES, CRATES OR METAL SHIPPING CONTAINERS, A DUPLICATE MATERIEL CONDITION TAG OR LABEL WILL BE SECURELY ATTACHED TO THE EXTERIOR OF THE PACKAGE OR CONTAINER IN SUCH A MANNER THAT WILL AFFORD MAXIMUM PROTECTION FROM HANDLING AND WEATHER. TAGS WILL BE COMPLETED EITHER BY TYPEWRITTEN OR PRINTED BLACK LEAD PENCIL ENTRIES. ITEMS OF A COMMON OR NONTECHNICAL NATURE (i.e., COMMON HARDWARE, BULK MATERIALS, ETC.) THE SERVICEABILITY OF WHICH IS OBVIOUS, AND THE IDENTITY AND INSPECTION REQUIREMENTS ADEQUATELY INDICATED BY COMMERCIAL TAGS, LABELS OR MARKINGS, MAY BE RECEIVED, STORED, ISSUED OR SHIPPED WITHOUT MATERIEL CONDITION TAGS.

[ ] d. OTHER

Figure 9. Preservation, Packaging, Packing, and Marking Requirements.

SECTION IV
FINAL TEST PROCEDURES

19. FINAL TESTING.

This section describes tests after overhaul or any major repair to determine acceptability of the AC generator.

a. If AC generator fails under test to meet any of the following test requirements and visual inspection does not disclose cause of trouble, disassemble and repeat inspection. Refer to table 7 for troubleshooting. After reassembly, repeat test procedure from beginning.

b. Test equipment used for these tests is listed in table 1. Perform all tests at room temperature 77° F (25° C).

Table 7. Troubleshooting

TROUBLE	PROBABLE CAUSE	REMEDY
No output voltage.	Generator brushes not making contact.	Check that brushes slide freely in holders. Check spring condition. Check slipring and machine if necessary. (See fig. 4).
	Generator stator open.	Replace stator.
	Generator field open.	Replace rotor.
No output voltage with excess heat.	Generator stator grounded or shorted.	Replace stator.
Output voltage high or low.	Regulator out of adjustment.	Adjust variable resistor on regulator.
Output voltage high (cannot be adjusted).	Generator field grounded.	Replace rotor.
Output voltage unstable.	Loose or dirty connections.	Clean and tighten.
	Poor brush contact.	Check brush condition. Check spring condition. Check that brushes are properly seated. Check concentricity of slipring. Machine if necessary.
Brushes sparking or arcing.	Brushes worn or broken.	Replace brushes. Turn sliprings if necessary.
	Brushes not seated.	Run-in brushes. (See paragraph 20.)
	Brushes sticking in holder.	Free and clean brush holders.
	Generator field grounded.	Replace rotor.
	Sliprings out of round.	Check concentricity and machine if necessary (See figure 4).
Generator excessively noisy.	Rotor unbalanced.	Replace rotor if unable to rebalance (See para. 13*e*).
	Bearings defective.	Replace bearing.
	Loose bearing assembly.	Refer to figure 6 for bearing shimming procedures. Tighten all mounting screws.
	Fan rubbing.	Check fan and clearance. Reshim if necessary. Replace fan if it does not run true. (See para. 16*q* & fig. 7.)
Unit overheating.	Poor ventilation.	Assure adequate air supply to air inlets. Clean internal air passages.
	Bearings worn or lubricant depleted.	Replace bearing.
	Excessive load.	Check load against Para. 6.

20. BRUSH RUN-IN.

Perform run-in of the generator brushes as follows:

a. Mount generator on the variable drive unit.

b. Run-in the brushes by operating at 12000 RPM with no load until there is evidence that the brushes contact the slipring surfaces at least 100 percent in the direction of rotation and 75 percent in the longitudinal direction.

c. After obtaining proper seating, proceed to remainder of tests. At conclusion, check that the sliprings are properly filmed as evidenced by darkening or discoloration of the contact surface. If necessary, to obtain this condition, operate the unit at full load for an additional period.

21. PERMANENT MAGNET CHARGING AND RETENTIVITY TEST.

If a new rotor has been installed in the generator, perform the following procedure: (See figure 10).

a. Mount the generator on the variable drive unit.

b. With the regulator disconnected, apply 24 vdc minimum to the field. Use a standard aircraft battery or equivalent dc power supply.

NOTE

Be certain to connect dc + to pin C.

c. Run the generator at 12000 RPM.

d. Disconnect battery and apply at least five short circuits to the output—pins B and D.

NOTE

Steps *e* and *f* shall be performed immediately after short circuits.

e. Measure output voltage. Reading must be at least 4 vac without external excitation.

f. Shut down drive unit. Connect regulator. Restart generator and measure output voltage during start-up. Output voltage must reach rated value by 7000 RPM.

22. PERFORMANCE TESTS.

Check output voltage regulation with unit connected in accordance with figure 9. With the unit operating at 12000 RPM, no load, set output to 115 vac by means of the variable resistor on the voltage regulator do not reset during test. Use unity P. F. loads only. Apply and remove loads suddenly (Shock Loadings).

a. At 8900 RPM, vary load from zero to full rated current to zero.

b. Repeat preceding at 12000 RPM and 14000 RPM.

c. Output voltage recorded shall remain within the limit of 115 $\pm$ 6 volts.

d. Voltage modulation shall not exceed 1% during these tests.

23. OVERSPEED TEST.

If the rotor has been rebalanced during overhaul, perform the overspeed test below.

WARNING

When performing overspeed test, make sure that personnel and equipment are kept clear of test area. If rotor fails due to centrifugal stresses, there is danger from flying metal.

a. Mount generator on drive unit.

b. Operate without load and with regulator disconnected.

c. Run unit at 16000 RPM for 1 to 2 minutes.

d. There shall be no mechanical failure.

e. The unit shall pass the performance test of paragraph 19 at 12000 RPM.

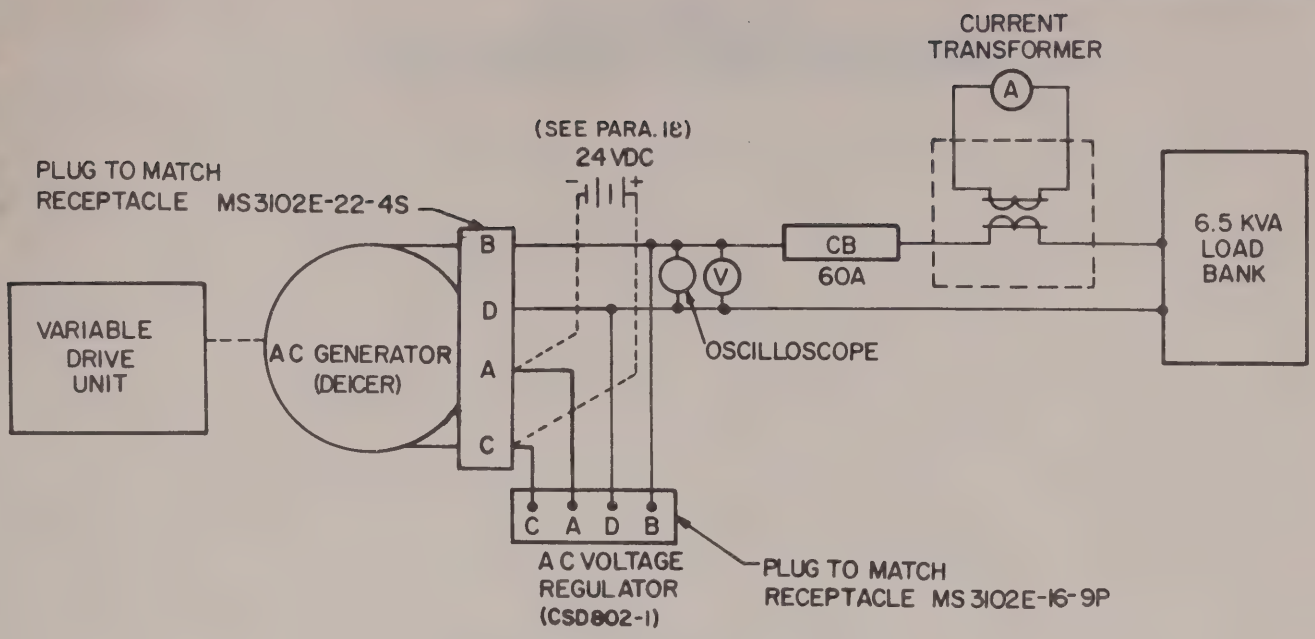


Figure 10. Generator Bench Test Set-up.

SECTION V
DIFFERENCE DATA SHEETS

Not applicable.

APPENDIX A
REFERENCES

TM 38–750 The Army Maintenance Management System

APPENDIX B
REPAIR PARTS AND SPECIAL TOOLS LIST
(Current as of 2 November 1970)

Section I. INTRODUCTION

B-1. SCOPE.

This appendix lists repair parts, special tools, test and support equipment, and maintenance supplies required for the performance of general support maintenance of the alternating current generator.

B-2. GENERAL.

This Repair Parts and Special Tools Listing is divided into the following sections:

a. Repair Parts—Section II. A list of repair parts authorized for the performance of maintenance at the general support level in figure and item number sequence. Maintenance supplies (MSUP) are listed within the section in ascending Federal stock number sequence.

b. Special Tools, Test and Support Equipment—Section III. A list of special tools, test and support equipment authorized for the performance of maintenance at the general support level.

c. Federal Stock Number and Reference Number Index—Section IV. This section is divided as follows:

(1) A list of Federal stock numbers in ascending numerical sequence cross-referenced to the illustration figure and item number.

(2) A list of reference numbers in ascending alpha-numerical sequence cross-referenced to the manufacturer's Federal supply code, illustration figure and item number.

B-3. EXPLANATION OF COLUMNS.

The following provides an explanation of columns in the tabular lists in sections II and III:

a. Source, Maintenance and Recoverability Codes (SMR), Column 1.

(1) Source code indicates the selection status and source for the listed item. Source codes are:

CODE	*EXPLANATION*
P	Repair Parts, Special Tools and Test Equipment supplied from the GSA/DSA, or Army supply system, and authorized for use at indicated maintenance categories.
P2	Repair Parts, Special Tools and Test Equipment which are procured and stocked for insurance purposes because the combat or military essentiality of the end item dictates that a minimum quantity be available in the supply system.
P9	Assigned to items which are NSA design controlled: unique repair parts, special tools, test, measuring and diagnostic equipment, which are stocked and supplied by the Army COMSEC Logistic System and which are not subject to the provisions of AR 380–41.
P10	Assigned to items which are NSA design controlled: special tools, test, measuring and diagnostic equipment for COMSEC support, which are accountable under the provisions of AR 380–41, and which are stocked and supplied by the Army COMSEC Logistic System.
M	Repair Parts, Special Tools and Test Equipment which are not procured or stocked, as such, in the supply system but are to be manufactured at indicated maintenance levels.
A	Assemblies which are not procured or stocked as such, but are made up of two or more units. Such component units carry individual stock numbers and descriptions, are procured and stocked separately and can be assembled to form the required assembly at indicated maintenance categories.
X	Parts and assemblies that are not procured or stocked because the failure rate is normally below that of the applicable end item of component. The failure of such part or assembly should result in retirement of the end item from the supply system.

CODE	*EXPLANATION*
X1	Repair parts which are not procured or stocked. The requirement for such items will be filled by the next higher assembly or component.
X2	Repair Parts, Special Tools, and Test Equipment which are not stocked and have no foreseen mortality. The indicated maintenance category requiring such repair parts will attempt to obtain the parts through cannibalization or salvage. The item may be requisitioned with exception data, from the end item manager, for immediate use.
G	Major assemblies that are procured with PEMA funds for initial issue only as exchange assemblies at DSU and GSU level. These assemblies will not be stocked above the DS and GS level or returned to depot supply level.

NOTE: Cannibalization or salvage may be used as a source of supply for any items source coded above except those coded X1 and aircraft support items as restricted by AR 700–42.

(2) Maintenance code indicates the lowest category of maintenance authorized to install the listed item. The maintenance level codes are:

CODE	*EXPLANATION*
C	Crew or operator maintenance.
O	Organizational maintenance.
F	Direct support maintenance.
H	General support maintenance.

(3) Recoverability code indicates whether unserviceable items should be returned for recovery or salvage. Items not coded are nonrecoverable. Recoverability codes are:

CODE	*EXPLANATION*
R	Applied to repair parts, (assemblies and components) special tools and test equipment which are considered economically repairable at direct and general support maintenance levels. When the item is no longer economically repairable, it is normally disposed of at the GS level. When supply considerations dictate, some of these repair parts may be listed for automatic return to supply for depot level repair as set forth in AR 710–50. When so listed, they will be replaced by supply on an exchange basis.
S	Repair Parts, Special Tools, Test Equipment and assemblies which are economically repairable at DSU and GSU activities and which normally are furnished by supply on an exchange basis. When items are determined by a GSU to be uneconomically repairable, they will be evacuated to a depot for evaluation and analysis before final disposition.
T	Higher dollar value recoverable repair parts, special tools and test equipment which are subject to special handling and are issued on an exchange basis. Such items will be repaired or overhauled at depot maintenance activities only. No repair may be accomplished at lower levels.
U	Repair Parts, Special Tools and Test Equipment specifically selected for salvage by reclamation units because of precious metal content, critical materiels, high dollar value or reusable casings or castings.

b. Federal Stock Number, Column 2. Indicates the Federal stock number assigned to the item and will be used for requisitioning purposes. Items source coded A, M, X1 or X2 are not assigned a Federal stock number.

c. Description, Column 3. Indicates the Federal item name and any additional description of the item required. An explanation of notes and/or codes used in this column appear at the end of the figure(s) breakdown. The description column contains the following subcolumns.

(1) *Reference number and manufacturer's code.* Indicates a part number or other reference number for the listed item followed by the applicable five-digit Federal supply code for manufacturers in parentheses.

(2) *Usable on code.* Not applicable.

d. Unit of Measure (U/M), Column 4. A 2-character alphabetical abbreviation indicating the amount or quantity of the item upon which the allowances are based, e.g., FT, EA, PR.

e. Quantity Incorporated in Unit, Column 5. Indicates the quantity of the item used in the assembly. A "V" appearing in this column in lieu of a quantity indicates that a definite quantity cannot be indicated.

f. Thirty-day GS Maintenance Allowance, Column 6.

(1) The allowance column is divided into three subcolumns. Indicated in each subcolumn, opposite the first appearance of each item, is the total quantity of items authorized for the number of equipments supported. Subsequent appearances of the same item will have the letters "REF" in this column. Items authorized for use as required, but not for initial stockage, are identified with an asterisk (*) in the allowance column.

(2) The quantitative allowance for GS level of maintenance will represent initial stockage for a 30-day period for the number of equipments supported.

(3) Determination of the total quantity of parts required for maintenance of more than 100 of these equipments can be accomplished by converting the equipment quantity to a decimal factor by placing a decimal point before the next to last digit of the number to indicate hundredths, and multiplying the decimal factor by the parts quantity authorized allowance for 51–100 allowance column.

Example: authorized allowance for 51–100 equipments is 40; for 150 equipments, multiply 40 by 1.50, or 60 parts required.

(4) The basis of issue for authorized special tools, test and support equipment is the number of end items of equipment supported.

g. One-year Allowance per 100 Equipments/Contingency Planning Purposes, Column 7. Indicates opposite the first appearance of each item, the total quantity required for distribution and contingency planning purposes. The range of items indicates total quantities of all authorized items required to provide for adequate support of 100 equipments for one year.

h. Depot Maintenance Allowance per 100 Equipments, Column 8. Not applicable.

i. Illustration, Column 9. Illustrations appear in the narrative portion of this manual. This column is divided as follows:

(1) *Figure number, column 9a.* Indicates the figure number of the illustration in which the item is shown. Appearances of the letters "MSUP" in this column indicate maintenance supplies located in section II; the letters "TOOL" indicate special tools located in section III.

(2) *Item number, column 9b.* Indicates the callout number to reference the item in the illustration.

B-4. HOW TO LOCATE REPAIR PARTS.

a. When Federal Stock Number or Reference Number is Unknown:

(1) *First.* Find the exploded view illustration of the assembly or subassembly to which the repair part belongs.

(2) *Second.* Identify the repair part on the illustration and note the illustration figure and item number of the repair part.

(3) *Third.* Using the Repair Parts Listing, find the figure and item number listed in the illustration column.

b. When Federal Stock Number or Reference Number is Known:

(1) *First.* Using the Index of Federal Stock Numbers and Reference Numbers, find the pertinent Federal stock number or reference number. This index is in ascending Federal stock number sequence followed by a list of reference numbers in ascending alphanumerical sequence, cross-referenced to the illustration figure and item number.

(2) *Second.* Using the Repair Parts Listing, find the figure and item number listed in the illustration column referenced in the Index of Federal Stock Numbers and Reference Numbers.

B-5. FEDERAL SUPPLY CODES FOR MANUFACTURERS.

CODE	*MANUFACTURER*
07639	American Machine and Foundry Co Leland Airborne Products Division Vandalia OH 45377
18778	Fairchild Camera and Instrument Corp Du Mont Electron Tubes Division 750 Bloomfield Ave Clifton NJ 07015
19315	Bendix Corp The Navigation and Control Division Teterboro NJ 07608
35662	Howell Electric Motors Corp Howell Stamping Division 800 Leo Dayton OH 45404
64959	Western Electric Co Inc 83 Maiden Lane New York NY 10038
77068	Bendix Corp The Electrodynamics Division 11600 Sherman Way North Hollywood CA 91605
80063	Army Electronics Command Procurement and Production Directorate Fort Monmouth NJ 07703
81348	Federal Specifications Promulgated by General Services Administration
81349	Military Specifications Promulgated by Standardization Div Directorate of Logistic Services DSA
88044	Aeronautical Standards Group Dept of Navy and Air Force
89954	Kollsman Instrument Corp 575 Underhill Blvd Syosset NY 11791
91547	AVCO/Lycoming Division Stratford Plant 550 S Main St Stratford CT 06497
94499	Dow Corning Corp Alpha Molykote Plant 64 Harvard Ave Stamford CT 06902
96906	Military Standards Promulgated by Standardization Div Directorate of Logistics Services DSA
99664	United Manufacturing Division of UMC Electronics Co 460 Sackett Point Road North Haven CT 06473

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR CODE			USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30-DAY GS MAINT ALW (a) 1-20	(b) 21-50	(c) 51-100	(7) 1-YR ALWPER 100 EQUIP CNTGCY	(8) DEPOT MAINT ALWPER 100 EQUIP	(9) ILLUSTRATION (a) FIG NO	(b) ITEM NO
	6115-856-5723	AGE121-1	(07639)	GENERATOR,ALTERNATING CURRENT.....		EA							1	
	6115-973-1223	AGE121-1A	(07639)	GENERATOR,ALTERNATING CURRENT.....		EA							1	
				SECTION II REPAIR PARTS AC DEICER GENERATOR										
P--H--	6115-951-7489	A15461	(07639)	COVER,ELECTRICAL.....		EA	2	*	*	*			2	1
P--H--	5305-984-4988	MS35206-228	(96906)	SCREW,MACHINE.....		EA	4	*	*	*			2	2
P--H--	5310-045-4007	MS35338-41	(96906)	WASHER,LOCK.....		EA	4	*	*	*			2	3
P--H--	5310-167-0832	AN960-6L	(88044)	WASHER,FLAT.....		EA	4	*	*	*			2	4
		A15468		BRUSH,ELECTRICAL CONTACT.....NOTE 1			4						2	5
		A15613		BRUSH,ELECTRICAL CONTACT.....NOTE 1			2						2	6
P--H--	5310-934-9747	MS35649-262	(96906)	NUT,PLAIN,HEXAGON.....		EA	4	*	*	*			2	7
P--H--	5310-045-4007	MS35338-41	(96906)	WASHER,LOCK.....		EA	4	*	*	*			2	8
P--H--	5310-167-0832	AN960-6L	(88044)	WASHER,FLAT.....		EA	4	*	*	*			2	9
		A15420		CAP,ELECTRICAL.....NOTE 1			4						2	10
P--H--	5975-978-9617	B9211	(07639)	COVER,CONDUIT.....		EA	1	*	*	*			2	11
P--H--	5305-984-4988	MS35206-228	(96906)	SCREW,MACHINE.....		EA	4	*	*	*			2	12
P--H--	5310-045-4007	MS35338-41	(96906)	WASHER,LOCK.....		EA	4	*	*	*			2	13
P--H--	5310-167-0832	AN960-6L	(88044)	WASHER,FLAT.....		EA	4	*	*	*			2	14
P--H--	5340-895-1640	A15667-5	(07639)	CLAMP,LOOP.....		EA	1	*	*	*			2	15
P--H--	5305-984-4988	MS35206-228	(96906)	SCREW,MACHINE.....		EA	1	*	*	*			2	16
P--H--	5310-045-4007	MS35338-41	(96906)	WASHER,LOCK.....		EA	1	*	*	*			2	17
P--H--	5310-167-0816	AN960-6	(88044)	WASHER,FLAT.....		EA	1	*	*	*			2	18
P--H--	5935-491-4333	MS3102R22-4S	(96906)	CONNECTOR,RECEPTACLE.....		EA	1	*	*	*			2	20
P--H--	5305-889-2997	MS35206-215	(96906)	SCREW,MACHINE.....		EA	4	*	*	*			2	21
P--H--	5310-543-2410	MS35338-40	(96906)	WASHER,LOCK.....		EA	4	*	*	*			2	22
P--H--	5310-950-1310	MS27183-4	(96906)	WASHER,FLAT.....		EA	4	*	*	*			2	23
P--H--	5910-080-0753	CP05A3AKE103K3	(81349)	CAPACITOR,FIXED.....		EA	2	*	*	*			2	24
P--H--	5305-984-4984	MS35206-227	(96906)	SCREW,MACHINE.....		EA	2	*	*	*			2	25
P--H--	5310-045-4007	MS35338-41	(96906)	WASHER,LOCK.....		EA	2	*	*	*			2	26
P--H--	5310-422-7138	059CM	(07639)	WASHER,FLAT.....		EA	2	*	*	*			2	27
P--H--	5340-896-5093	A10618-1	(07639)	CLAMP.....		EA	2	*	*	*			2	28
P--H--	6115-951-7484	K20439	(07639)	LEAD,ELECTRICAL.....		EA	1	*	*	*			2	29
P--H--	6115-951-7485	K20440	(07639)	LEAD,ELECTRICAL.....		EA	1	*	*	*			2	30
P--H--	6115-978-9615	G5148	(07639)	COVER,FAN.....		EA	1	*	*	*			2	31
P--H--	5305-984-4988	MS35206-228	(96906)	SCREW,MACHINE.....		EA	7	*	*	*			2	32
P--H--	5310-045-4007	MS35338-41	(96906)	WASHER,LOCK.....		EA	7	*	*	*			2	33
P--H--	5310-167-0832	AN960-6L	(88044)	WASHER,FLAT.....		EA	7	*	*	*			2	34
P--H--	6150-959-3599	P9356	(07639)	FAN,ELECTRICAL.....		EA	1	*	*	*			2	35
P--H--	3110-225-8309	MS19068-022	(96906)	NUT,PLAIN,ROUND.....		EA	1	*	*	*			2	36
P--H--	3110-045-3810	A10384	(07639)	WASHER,KEY.....		EA	1	*	*	*			2	37
P--H--	5315-691-0032	A10390	(07639)	KEY,MACHINE.....		EA	1	*	*	*			2	38
		K20390-1		SHIM.....NOTE 1			V						2	39

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR CODE			USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30-DAY GS MAINT ALW (a) 1-20	(b) 21-50	(c) 51-100	(7) 1-YR ALWPER 100 EQUIP CNTGCY	(8) DEPOT MAINT ALWPER 100 EQUIP	(9) ILLUSTRATION (a) FIG NO	(b) ITEM NO
P--H--	6115-978-2184	A19024	(07639)	PLATE,RETAINING.....		EA	1	*	*	*			2	40
P--H--	5305-984-6193	MS35206-245	(96906)	SCREW,MACHINE.....		EA	4	*	*	*			2	41
P--H--	5310-045-3299	MS35338-42	(96906)	WASHER,LOCK.....		EA	4	*	*	*			2	42
P--H--	5310-515-8058	AN960-8	(88044)	WASHER,FLAT.....		EA	4	*	*	*			2	43
		A10960		SPRING,LOADING.....NOTE 1			1						2	44
P--H--	5340-918-0754	1562-10	(07639)	SPACER.....		EA	V	*	*	*			2	45
P--H--	5340-531-1862	SCB84916	(80063)	SPACER,RING.....		EA	V	*	*	*			2	46
P--H--	3110-179-7288	A10388	(07639)	PLATE,RETAINING.....		EA	1	*	*	*			2	47
P--H--	5305-954-2728	MS35190-255	(96906)	SCREW,MACHINE.....		EA	4	*	*	*			2	48
P--H--	5305-983-6652	MS16998-29	(96906)	SCREW,CAP.....		EA	4	*	*	*			2	49
P--H--	5310-167-0834	AN960-10L	(88044)	WASHER,FLAT.....		EA	4	*	*	*			2	50
P--H--	6115-068-5851	P9764	(07639)	END BELL,ELECTRICAL.....		EA	1	*	*	*			2	
P--H--	5910-973-4555	K20438	(07639)	.CAPACITOR,FIXED.....		EA	4	*	*	*			2	51
P--H--	5310-167-0832	AN960-6L	(88044)	.WASHER,FLAT.....		EA	4	*	*	*			2	53
P--H--	5340-896-5093	A10618-1	(07639)	.CLAMP.....		EA	4	*	*	*			2	54
		A15884		BEARING,BALL,ANNULAR.....NOTE 1			1						2	56
		A10387		PLATE.....NOTE 1			1						2	57
P--H--	3110-978-2185	A20093	(07639)	BEARING,BALL.....NOTE 1		EA	1	*	*	*			2	58
P--H--	5340-804-7653	MS16624-1078	(96906)	RING,RETAINING.....		EA	1	*	*	*			2	59
P--H--	6115-978-9618	B9210	(07639)	SHAFT,STUB.....		EA	1	*	*	*			2	60
P--H--	5305-951-6911	K22319-1	(07639)	SCREW,MACHINE.....		EA	2	*	*	*			2	61
P--H-R	6115-951-7487	C5099	(07639)	ROTOR,GENERATOR.....		EA	1	*	*	*			2	62
P--H--	6125-951-7483	C5098	(07639)	STATOR,MOTOR GENERATOR.....		EA	1	*	*	*			2	
P--H--	6115-088-5030	K20437	(07639)	.LEAD,ELECTRICAL.....		EA	2	*	*	*			2	63
P--H--	5310-167-0832	AN960-6L	(88044)	.WASHER,FLAT.....		EA	2	*	*	*			2	65
P--H--	5340-895-1642	A15667-2	(07639)	.CLAMP,LOOP.....		EA	2	*	*	*			2	66
P--H--	6125-973-4019	D801	(07639)	.STATOR,MOTOR GENERATOR.....		EA	1	*	*	*			2	67
P--H--	5305-724-6794	MS51964-48	(96906)	SETSCREW.....		EA	3	*	*	*			2	68
P--H--	6115-978-9616	B9213	(07639)	.SCREEN.....		EA	1	*	*	*			2	69
P--H--	5305-889-3002	MS35206-242	(96906)	.SCREW,MACHINE.....		EA	4	*	*	*			2	70
P--H--	5310-045-3299	MS35338-42	(96906)	.WASHER,LOCK.....		EA	4	*	*	*			2	71
P--H--	5310-515-8058	AN960-8	(88044)	.WASHER,FLAT.....		EA	4	*	*	*			2	72
P--H--	6115-951-8700	D797	(07639)	.HOUSING,ELECTRICAL.....		EA	1	*	*	*			2	73
P--H--	9905-841-1908	MS26515-1	(96906)	PLATE,IDENTIFICATION.....		EA	1	*	*	*			2	
P--H--	5305-889-3116	MS35206-213	(96906)	SCREW,MACHINE.....		EA	4	*	*	*			2	
P--H--	5310-543-2410	MS35338-40	(96906)	WASHER,LOCK.....		EA	4	*	*	*			2	
P--H--	5310-950-1310	MS27183-4	(96906)	WASHER,FLAT.....		EA	4	*	*	*			2	
P--H--	9905-951-8696	A15639	(07693)	PLATE,DESIGNATION.....		EA	1	*	*	*			2	
P--H--	6115-975-7195	P10249	(07639)	REPAIR KIT,GENERATOR.....		EA	1	*	*	*			2	
				NOTE 1 COMPONENT OF KIT 6115-975-7195										
				MAINTENANCE SUPPLIES										
P--H--	3439-224-3567		(81348)	SOLDER,TIN ALLOY-WIRE,ROSIN CORED,. FED QQ-S-571,5 LB SPOOL		LB	V	*	*	*			MSUP	

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR CODE			USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30-DAY GS MAINT ALW (a) 1-20	(b) 21-50	(c) 51-100	(7) 1-YR ALWPER 100 EQUIP CNTGCY	(8) DEPOT MAINT ALWPER 100 EQUIP	(9) ILLUSTRATION (a) FIG NO	(b) ITEM NO
P--H--	3439-247-6921	M33	(80063)	SOLDER,LEAD ALLOY-BAR,FED QQ-S-571.		EA	V	*	*	*			MSUP	
P--H--	3439-727-0489		(81348)	SOLDER,LEAD-TIN ALLOY-WIRE,ROSIN... CORED,FED QQ-S-571		LB	V	*	*	*			MSUP	
P--H--	5350-264-3484		(81349)	PAPER,ABRASIVE-FLINT,9 IN.W,..... 10 IN.LG,FED P-P-105,CLASS 2		EA	V	*	*	*			MSUP	
P--H--	5970-161-7421	GLYPTAL1201-1 PT	(89954)	INSULATING VARNISH,ELECTRICAL-RED.. 1 PT CAN		PT	V	*	*	*			MSUP	
P--H--	6810-264-6715	MOLYKOTETYPE Z	(94499)	MOLYBDENUM DISULFIDE,TECHNICAL-.... POWDER FORM,MIL-M-7866,1 LB CAN		LB	V	*	*	*			MSUP	
P--H--	6850-264-9038		(81348)	DRY CLEANING SOLVENT-LIQUID,..... P-D-680, TYPE 1,5 GAL DRUM		GL	V	*	*	*			MSUP	
P--H--	8010-527-2500		(81349)	LACQUER-BLACK,FULL GLOSS,..... MIL-L-19537,1 QT CAN		QT	V	*	*	*			MSUP	
P--H--	8010-835-2114		(81349)	PRIMER COATING-ZINC CHROMATE,..... YELLOW,MIL-P-8585,1 PT CAN		PT	V	*	*	*			MSUP	
P--H--	8030-081-2338	1-300-199-01	(91547)	SEALING COMPOUND-RED,MIL-S-22473,.. GRADE A,50 CC PLASTIC SQUEEZE BOTTLE		CC	V	*	*	*			MSUP	
P--H--	8030-515-0319		(81349)	TAPE,PRESSURE SENSITIVE-GLASS..... CLOTH BACKING,OPAQUE,NATURAL, 2 IN.W,MIL-T-4053,60 YD ROLL		YD	V	*	*	*			MSUP	
P--H--	8030-530-5234		(81349)	SEALING COMPOUND-SEMISOLID,..... MIL-T-5542,1 LB CAN		CN	V	*	*	*			MSUP	
P--H--	8110-254-5711	MS24347-8	(96906)	DRUM,SHIPPING AND STORAGE-..... 9 IN.DEPTH,8.5 IN.ID,MIL-D-6055		EA	V	*	*	*			MSUP	
P--H--	8110-254-5713	MS27684-3	(96906)	DRUM,SHIPPING AND STORAGE-..... 16.74 IN.DEPTH,10.50 IN.ID, MIL-D-6054		EA	V	*	*	*			MSUP	
P--H--	8135-753-4661		(81349)	BARRIER MATERIAL,GREASEPROOFED..... AND WATERPROOFED,FLEXIBLE-SMOOTH, HEAVY DUTY,RED, 36 IN.W, MIL-B-121,TYPE 1,GRADE A,CLASS 2, 100 YD RL		YD	V	*	*	*			MSUP	
P--H--	9150-265-9443		(81349)	LUBRICATION OIL,ENGINE-MIL-L-2104,. GRADE 50,55 GAL DRUM		GL	V	*	*	*			MSUP	
P--H--	9150-542-1430		(81349)	LUBRICATING OIL,GENERAL PURPOSE-... MIL-L-7870,4 OZ CAN		OZ	V	*	*	*			MSUP	
P--H--	9150-944-8953		(81349)	GREASE,AIRCRAFT-MIL-G-81322,..... 1 LB CAN		LB	V	*	*	*			MSUP	
				SECTION III SPECIAL TOOLS, TEST, AND SUPPORT EQUIPMENT										
P--H-R	6110-854-7078	CSD802-1	(07639)	REGULATOR,VOLTAGE.....		EA	V	*	*	*			TOOL	

SECTION IV
FEDERAL STOCK NUMBER AND REFERENCE NUMBER INDEX

STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER	STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER
3110-045-3810	2	37	5340-895-1640	2	15
3110-179-7288	2	47	5340-895-1642	2	66
3110-225-8309	2	36	5340-896-5093	2	28
3110-978-2185	2	58	5340-896-5093	2	54
3439-224-3567	MSUP		5340-918-0754	2	45
3439-247-6921	MSUP		5340-984-4446	2	39
3439-727-0489	MSUP		5350-264-3484	MSUP	
5305-724-6794	2	68	5910-080-0753	2	24
5305-889-2997	2	21	5910-973-4555	2	51
5305-889-3002	2	70	5935-491-4333	2	20
5305-889-3116	2		5970-161-7421	MSUP	
5305-951-6911	2	61	5975-978-9617	2	11
5305-954-2728	2	48	6110-854-7078	TOOL	
5305-983-6652	2	49	6115-068-5851	2	
5305-984-4984	2	25	6115-088-5030	2	63
5305-984-4988	2	2	6115-646-8879	2	10
5305-984-4988	2	12	6115-856-5723	1	
5305-984-4988	2	16	6115-951-7484	2	29
5305-984-4988	2	32	6115-951-7485	2	30
5305-984-6193	2	41	6115-951-7487	2	62
5310-045-3299	2	42	6115-951-7489	2	1
5310-045-3299	2	71	6115-951-8700	2	73
5310-045-4007	2	3	6115-973-1223	1	
5310-045-4007	2	8	6115-975-7195	2	
5310-045-4007	2	13	6115-978-2184	2	40
5310-045-4007	2	17	6115-978-9615	2	31
5310-045-4007	2	26	6115-978-9616	2	69
5310-045-4007	2	33	6115-978-9618	2	60
5310-167-0816	2	18	6125-951-7483	2	
5310-167-0832	2	4	6125-973-4019	2	67
5310-167-0832	2	9	6150-959-3599	2	35
5310-167-0832	2	14	6810-264-6715	MSUP	
5310-167-0832	2	34	6850-264-9038	MSUP	
5310-167-0832	2	53	8010-527-2500	MSUP	
5310-167-0832	2	65	8010-835-2114	MSUP	
5310-167-0834	2	50	8030-081-2338	MSUP	
5310-422-7138	2	27	8030-515-0319	MSUP	
5310-515-8058	2	43	8030-530-5234	MSUP	
5310-515-8058	2	72	8110-254-5711	MSUP	
5310-543-2410	2		8110-254-5713	MSUP	
5310-543-2410	2	22	8135-753-4661	MSUP	
5310-934-9747	2	7	9150-265-9443	MSUP	
5310-950-1310	2		9150-542-1430	MSUP	
5310-950-1310	2	23	9150-944-8953	MSUP	
5315-691-0032	2	38	9905-841-1908	2	
5340-531-1862	2	46	9905-951-8696	2	
5340-804-7653	2	59			

SECTION IV (Cont)

REFERENCE NUMBER	MFG CODE	FIG NUMBER	ITEM NUMBER
AGE121-1	07639	1	
AGE121-1A	07639	1	
AN960-10L	88044	2	50
AN960-6	88044	2	18
AN960-6L	88044	2	4
AN960-6L	88044	2	9
AN960-6L	88044	2	14
AN960-6L	88044	2	34
AN960-6L	88044	2	53
AN960-6L	88044	2	65
AN960-8	88044	2	43
AN960-8	88044	2	72
A10384	07639	2	37
A10387	35662	2	57
A10388	07639	2	47
A10390	07639	2	38
A10618-1	07639	2	28
A10618-1	07639	2	54
A10960	07639	2	44
A15420	35662	2	10
A15461	07639	2	1
A15468	07639	2	5
A15613	07639	2	6
A15639	07639	2	
A15667-2	07639	2	66
A15667-5	07639	2	15
A15884	07639	2	56
A19024	07639	2	40
A20093	07639	2	58
B9210	07639	2	60
B9211	07639	2	11
B9213	07639	2	69
CP05A3AKE103K3	81349	2	24
CSD802-1	07639	TOOL	
C5098	07639	2	
C5099	07639	2	62
D797	07639	2	73
D801	07639	2	67
GLYPTAL1201-1PT	89954	MSUP	
G5148	07639	2	31
K20390-1	07639	2	39
K20437	07639	2	63
K20438	07639	2	51
K20439	07639	2	29
K20440	07639	2	30
K22319-1	07639	2	61
059CM	07639	2	27
1-300-199-01	91547	MSUP	
1562-10	07639	2	45
MOLYKOTETYPEZ	94499	MSUP	
MS16624-1078	96906	2	59
MS16998-29	96906	2	49
MS19068-022	96906	2	36
MS24347-8	96906	MSUP	
MS26515-1	96906	2	
MS27183-4	96906	2	
MS27183-4	96906	2	23
MS27684-3	96906	MSUP	
MS3102R22-4S	96906	2	20
MS35190-255	96906	2	48
MS35206-213	96906	2	
MS35206-215	96906	2	21
MS35206-227	96906	2	25
MS35206-228	96906	2	2
MS35206-228	96906	2	12
MS35206-228	96906	2	16
MS35206-228	96906	2	32
MS35206-242	96906	2	70
MS35206-245	96906	2	41
MS35338-40	96906	2	
MS35338-40	96906	2	22
MS35338-41	96906	2	3
MS35338-41	96906	2	8
MS35338-41	96906	2	13
MS35338-41	96906	2	17
MS35338-41	96906	2	26
MS35338-41	96906	2	33
MS35338-42	96906	2	42
MS35338-42	96906	2	71
MS35649-262	96906	2	7
MS51964-48	96906	2	68
M33	80063	MSUP	
P10249	07639	2	
P9356	07639	2	35
P9764	07639	2	
SCB84916	80063	2	46

By Order of the Secretary of the Army:

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